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A New *Trithyreus* from Southern California (Pedipalpida, Schizomidae)

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In February, 1952, a small series of schizomid whip-scorpions of the genus *Trithyreus* was collected with the aid of a modified Berlese funnel from sycamore humus at Topanga Canyon, Santa Monica Mountains, Los Angeles County, California. Subsequently other specimens of the same species were seen running about on a moist, rotten log infested with subterranean termites near Tapia Park, 7 miles to the west. Since 1952 several additional collections of this same tiny arachnid have been made during the months of February, March, and April in the Malibu Creek watershed, mainly in the vicinity of Tapia Park and Crater Camp.

This species appears quite distinct from *Trithyreus pentapeltis* (Cook, 1899) and *T. wessoni* Chamberlin, 1939, the only two species heretofore known from North America. We take pleasure in naming it for Dr. John N. Belkin, who was first to note that it differed from the existing descriptions of *pentapeltis*.

Trithyreus belkini, new species

Figures 1–10

The following descriptions are based on the holotype male and allotype female, on euparal slides, and four paratypes (one male, three females) in alcohol. We follow as nearly as possible the style and terminology of Gertsch (1940):

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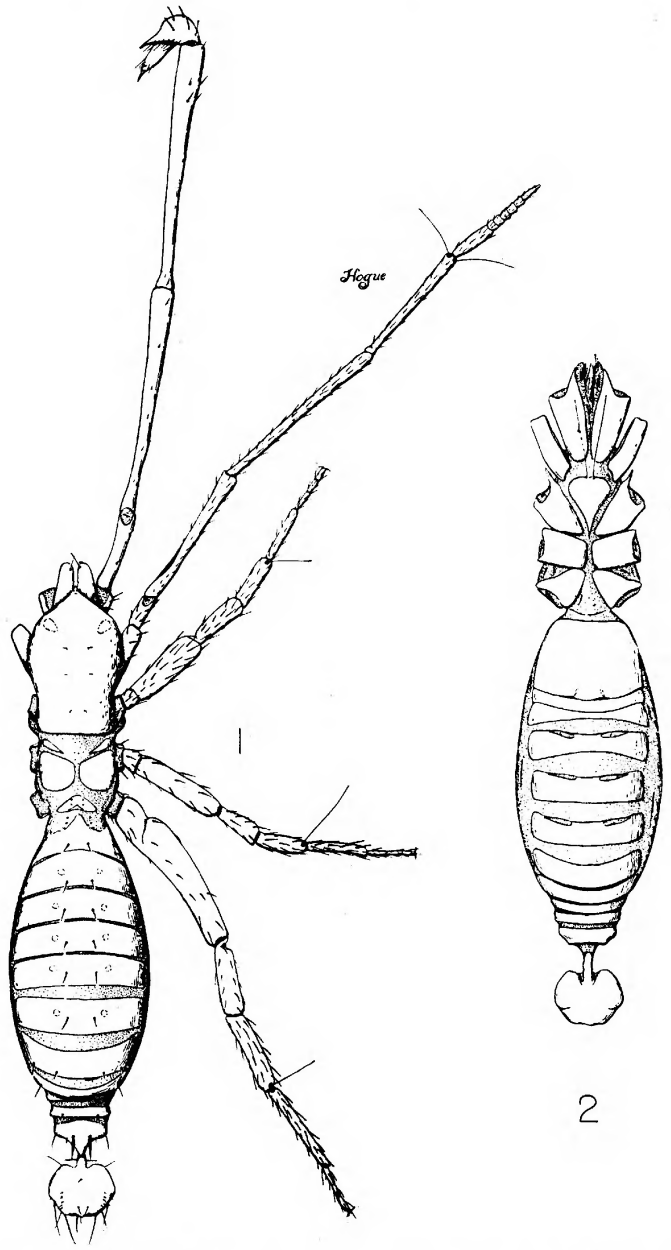
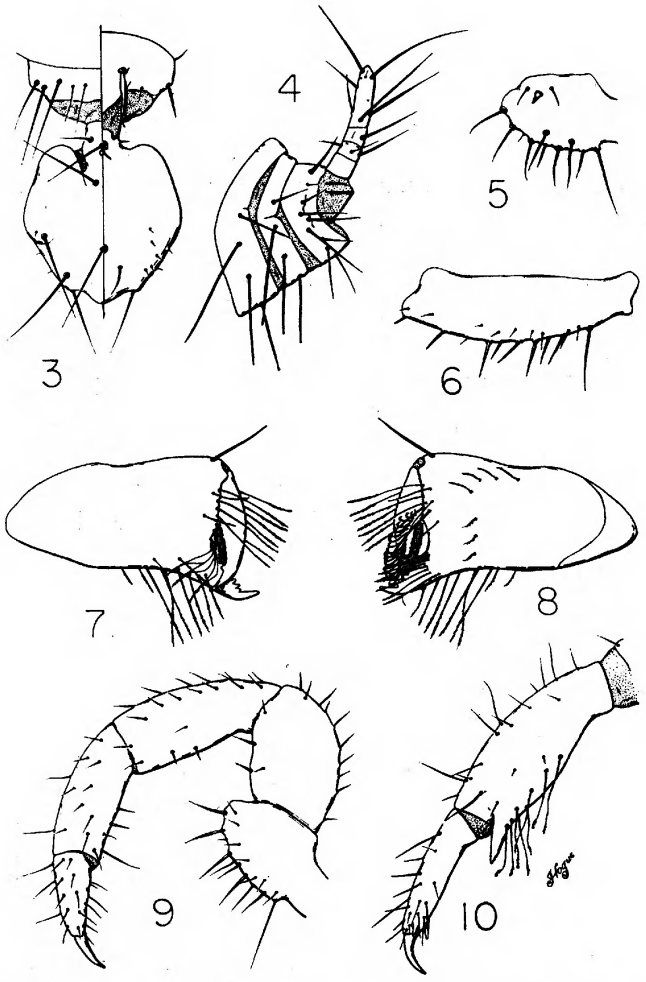


FIGS. 1–2. *Trithyreus belkini*, new species, paratype male (alcohol). 1. Dorsal aspect, left legs omitted. 2. Ventral aspect, setae and appendages omitted.



FIGS. 3–10. *Trithyreus belkini*, new species. 3. Dorsal (right) and ventral (left) aspects of male flagellum and abdominal segment XI. 4. Left lateral aspect of female flagellum and abdominal segments IX to XI. 5. Mesal aspect of right pedipalpal trochanter of female. 6. Lateral aspect of left pedipalpal trochanter of male. 7. Outer aspect of right male chelicera (dissected out and mounted in Hoyer's medium). 8. Inner aspect of right male chelicera. 9. Lateral aspect of left pedipalp of female, coxa omitted. 10. Mesal aspect of right pedipalpal tibia of male. (Figs. 7 and 8 drawn from paratype; others from holotype or allotype.)

MALE: Length (holotype; apex of first cheliceral segment to tip of flagellum) : 5.50 mm.

Color: Body sclerites brown, diffusing to red- or pink-brown caudad over tip of abdomen (including flagellum) and cephalad over anterior sternites and chelicerae; dark reddish brown on cheliceral digits and distally on legs I to III; pedipalp, including coxa, reddish brown as is leg I exclusive of coxa; remaining coxae and sternum uniformly pale brown.

Cephalothorax: Eye spots present as indistinct pale areas at antero-lateral angles of carapace; carapace strongly convex, projecting antero-medially as sharp process; mesopeltidia prominent, acutely pointed mesally; second thoracic tergite divided medially, each half wider than long, with lateral convex margin longer than mesal straight margin, posterior convex margin shorter than anterior straight margin; third thoracic tergite well sclerotized, broadly triangular in shape; anterior sternum subtriangular, apex produced caudally between coxae II, base smoothly convex and bearing two long setae medially.

Chelicera (figs. 7, 8) : First segment bearing seven short setae in two groups on inner surface, upper group of four more slender and longer than lower group of three, a heavy, apparently smooth seta at dorsal apex, eight long, feathered setae ventrally in line extending onto outer surface of fixed digit, with four shorter setae proximad or laterad of these; movable digit flanked at base by four outer and four inner identical, long, feathered setae proximad of which are four inner and two outer shorter feathered setae, comb of 21 teeth present on flexor surface extending to blunt tooth at about distal fourth, line of about 20 long distally feathered and curled setae extending diagonally across inner face of digit; three heavy, swollen, and apically attenuated feathered setae arising on first segment opposite comb; fixed digit crossed near base on inner side by line of nine long, feathered setae.

Pedipalp longer than body (6.39/5.50) ; trochanter not produced distally, subequal in length to first segment of chelicera, ventral margin gently convex, with strong setae (fig. 6), dorsal margin straighter, with a single short peg-like mesal seta dorsally; femur elongate, slender at base and widening to apex, with proximal and distal gentle curvatures, nearly three times length of trochanter; patella similar to but straighter than femur; tibia shorter than trochanter, distally with a heavy mesal spur onto which advance some of the feathered tibial setae (fig. 10) ; tarsus shorter than tibia, about four times length of claw.

Legs: Leg I with femur shorter and stouter than patella, longer than tibia; apex of tibia with two large sensory hair sockets, each bearing

long, fine hair; combined basitarsus and tarsus shorter than tibia; basitarsus shorter than tarsus; tibiae II to IV with one large apical hair socket, each bearing long, fine hair; femur IV massive, with usual obtuse angle on proximal dorsal margin.

	Pedipalp (mm.)	I (mm.)	II (mm.)	III (mm.)	IV (mm.)
Coxa	0.74	0.58	0.51	0.50	0.41
Trochanter	0.74	0.36	0.25	0.25	0.41
Femur	1.90	1.24	0.88	0.82	1.32
Patella	1.90	1.45	0.50	0.41	0.63
Tibia	0.65	1.07	0.54	0.43	0.91
Basitarsus	—	0.41	0.50	0.53	0.78
Tarsus	—	0.54	0.41	0.44	0.50
Basitarsus and tarsus	0.46	—	—	—	—
Total	6.39	5.65	3.59	3.38	4.73

Abdomen: Segments I to VIII with pleural membrane, IX to XI completely encircling abdomen; XI with pyramidal apex projecting over stalk of flagellum and flanked basally by two heavy, submedian setae.

Flagellum (fig. 3): Flat, roughly hexagonal, slightly longer than wide (0.53/0.58 mm.).

FEMALE: Length (allotype), 5.30 mm. Color as in male. Pedipalpal trochanter (fig. 5) produced distally, slightly beyond femur, much shorter than cheliceral base, ventrally with nine heavy setae, seven of which are marginal and two of which are somewhat mesal; remainder of pedipalp as figured (fig. 9); leg I as in male but much shorter; femur IV as in male; flagellum elongate, cylindrical, four-segmented, distal segment longer than three proximal segments combined; second segment bearing four elongate sensory pits, last segment bearing four circular sensory pits, two near apex and two near middle (fig. 4).

	Pedipalp (mm.)	I (mm.)	II (mm.)	III (mm.)	IV (mm.)
Coxa	0.74	0.58	0.56	0.50	0.40
Trochanter	0.50	0.33	0.25	0.21	0.41
Femur	0.58	1.11	0.82	0.74	1.20
Patella	0.60	1.24	0.50	0.38	0.58
Tibia	0.50	1.00	0.54	0.40	0.82
Basitarsus	—	0.38	0.50	0.46	0.73
Tarsus	—	0.53	0.41	0.38	0.43
Basitarsus and tarsus	0.30	—	—	—	—
Total	3.22	5.17	3.58	3.07	4.57

TYPE LOCALITY: Holotype male and allotype female, Crater Camp, Santa Monica Mountains, Los Angeles County, California, March 21, 1953, oak humus (J. N. Belkin and R. X. Schick), in the American Museum of Natural History. Paratypes: One male, three females, same data as above, in the American Museum of Natural History and the University of California at Los Angeles.

OTHER LOCALITIES: California: Topanga Canyon, Santa Monica Mountains, February 27, 1952; two males, three females, eight juveniles, sycamore humus (J. N. Belkin and W. A. McDonald), in the American Museum of Natural History and the University of California at Los Angeles; March 29, 1952, three juveniles, oak humus (R. X. Schick), in the American Museum of Natural History; Tapia Park, Santa Monica Mountains; April 4, 1954, one juvenile, termite-infested log (L. Moskowski), at the American Museum of Natural History; Santa Monica Mountains; April, 1953, four juveniles, under stones and logs (R. X. Schick), in the American Museum of Natural History.

The small series of *Trithyreus* from Topanga Canyon exhibits some striking dissimilarities, in the structure of the male pedipalp at least, from the types of *belkini*. In the Topanga form the trochanter is broad and is produced distally beyond the femur, unlike the narrow trochanter of the male types (fig. 6), and the length of the entire appendage is much reduced. The male flagellum and other features appear identical in both series.

While the Topanga and Malibu Creek watersheds are adjacent, it seems reasonable to assume that these moisture-loving creatures have been restricted to the canyon bottoms and hence are likely to have produced well-separated populations. In the absence of adequate material from either population, they are here regarded as conspecific.

The male of *belkini* is easily distinguished from that of *pentapeltis* and of *wessoni* by its very long pedipalp in which the tibia bears a mesal spur apically, and by its subhexagonal flagellum which is nearly as wide as long (ratio 0.92), whereas that organ is quite elongate in *pentapeltis* (ratio 0.30) and is trilobed in *wessoni*. The females of *belkini* and *pentapeltis* are more difficult to separate, the apparent gross differences being rather subtle and not suitable for use in a key. However, the number of setae on abdominal segments IX and X shows promise for the separation of these two species (the female of *wessoni* is not known). In the material at hand (seven *belkini*, three *pentapeltis*), *belkini* has six lateral and one ventral setae on each segment, while *pentapeltis* shows eight laterals and one ventral. When the great variability in presence and relative position of the

more proximal abdominal setae is considered, this character must be regarded as tentative until additional material becomes available.

Cook described *pentapeltis* from two males and one female collected "under debris of leaves or stones near pools" (1899, p. 254) in one of the canyons near Palm Springs, Riverside County, California. It has since been reported from Glen Ivy, Claremont, Laguna Beach, and Santa Cruz Island (Moles, 1917, p. 1; Hilton, 1932, pp. 45–46). We suspect that the population reported by Hilton (1932, one female, subsequently lost) from Santa Cruz Island, Santa Barbara County, will prove conspecific with or very close to *belkini,* in as much as the Channel Islands were once contiguous with the Santa Monica Mountains.

Casual inspection of slide-mounted schizomids indicates a wealth of minute characters that await use by the systematist. Small sense (?) pits (fig. 4) on the female flagellum which closely resemble the postantennal organs of certain collembolans, two patches of apical grooves on basitarsus I, and the large sensory hair sockets of the tibiae, while showing little difference between *belkini* and *pentapeltis,* may prove of value among other species or genera. The bifurcate or feathered setae of the chelicera, metasoma, and male pedipalpal tibia may prove valuable in this regard (figs. 7, 8, 10). The relative scarcity of schizomids in collections, rather than the absence of good characters, is to blame for the paucity of literature for this family.

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